DECLARATION OF UDO W. POOCH, Ph.D., P.E.

1. My name is Udo W. Pooch. I am over twenty-one years of age and am fully competent to make this Affidavit. I have personal knowledge of the facts set forth in this declaration, and they are true and correct. I have never been convicted of a felony or a crime involving moral turpitude.

2. I graduated from the University of Notre Dame in 1969 with a Ph.D. in High Energy Theoretical Physics. I am an expert in Computer systems, software systems, and simulation, and presently E-Systems Professor of Computer Science at Texas A&M University. My research interests include Operating Systems, Fault-Tolerant Environments, Reliability, Integrated Systems, Graphics, Software Systems and Development and Simulation as they in particularly apply to System Architectures, Computer Networks, Distributed Systems and Real-Time Systems. I am author or co-author of eighteen books on such topics as networks, simulation, mini-computers, designing with microcomputers, top-down modular programming, micro-programming, languages (including Turbo Pascal, QuickBasic and Ada), software engineering, and others. My latest books were "Distributed Simulation" (CRC Press 1997), "Computer System and Network Security" (CRC Press, 1996), "Discrete Event Simulation: A Practical Approach" (CRC Press, 1995) and "Telecommunications and Networking" (CRC Press, 1994). I have over 200 technical publications in various journals, proceedings, and other contributions to books, as well as over 160 presentations. In addition to being a reviewer to various journals and proceedings, I have served as series and/or guest editor for both CRC Press, Inc. and ABLEX Publishing Corporation. I have also been past guest editor for ACM and IEEE/CS on various computer science topics, and been program chairman for a number of conferences.

3. I have taught systems courses (Operating Systems, Networks, Resilient Systems, Fault-Tolerant Systems, Advanced Networking and Security, Distributed Systems, Software Engineering, and Simulation) for over 30 years while conducting research and supervising students in all areas of computer science.

4. I have been Principal or Co-principal investigator for several research projects sponsored by such organizations as NSF, IBM, U.S. Department of Transportation, George C. Marshall Space Flight Center, NASA, USAF, and US Navy. I also have a very active consulting practice with such organizations as IBM, USAF, US Corps of Engineers, PRC, Tracor, Quest Research Corporation, E-Systems, and the IRS. I have served as a testifying expert witness in over 60 court proceedings (see Appendix A) ranging on topics that include intellectual property, trade secrets, systems (hardware, software,
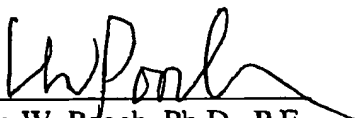
networks, data-bases, etc.) developments, Enterprise Resource Planning, Legacy systems and performance.

5. I am very active in several professional societies including ACM, IEEE Computer Society, SCS, and ORSA. I have been a past Chairman of the IEEE Technical Committee on Simulation, and have been both ACM (1974-80) and DPMA (1976-82) National Lecturer. I have been General and Program Chairman to numerous conferences. I am recipient of both the Texas A&M University wide Distinguished Teaching Award (1974) and the College of Engineering Teaching Award (1974). I have supervised over 260 MS/MCS graduates and over 55 Ph.D. graduates since coming to Texas A&M University in 1969. Currently I am supervising 13 Ph.D. and 24 MS/MCS students.

6. My background is more fully discussed in my Resume that is attached as Appendix A and incorporated herein by reference.

7. The above listed experience relating to packet communications and telecommunications, particularly my efforts in research, publishing and teaching in these subject areas, supports the conclusion that I was a person of ordinary skill in the art related to the subject matter of the invention described in U.S. Patent Application No. 09/874,005 at the time of its earliest priority date, June 24, 1994.

8. I have reviewed U.S. Patent Application No. 09/874,005, including the claims, and the latest Office Action dated June 17, 2004 in that case. In particular, I have reviewed the claims relating to the Examiner's rejection indicating the claim language "said first request signal including a request for a specified amount of bandwidth to be allocated to the first node for transmitting data from the first node to the communication controller" is not described in the specification.

9. Based on my experience up to June 24, 1994 and the state of the art at that time, bandwidth must be understood in a general fashion to refer to a limited resource of the communications system that is somehow allocated. Here, the signal bandwidth is fixed but must be shared by all requestors (requestors referring to pager units or nodes as referenced in U.S. Patent Application No. 09/874,005). Thus, bandwidth refers to the time needed by a requestor to transmit a given message, that time being determinable from the message length. Next, the specification at page 6, lines 9-14 refers to "conventional packet-type information" which any person skilled in the art would understand to include length information.

10. The key issue, which the bandwidth request/grant process addresses, is "When to issue a grant to a second, concurrent send message request and when should the second requestor be allowed to transmit?" Messages are not interleaved

on f_3, so transmissions must be controlled to prevent overlap. The central control station may be processing requests from multiple requestors concurrently. That is, requestor$_N$ may not be finished transmitting on frequency f_3 before requestor$_{N+1}$ transmits a request to transmit on frequency f_4. Thus, obviously, the central control station cannot issue a grant (see page 13, lines 5-13) immediately to requestor$_{N+1}$ without specifying a time when f_3 will be available.

11. Additionally, propagation delays must be accounted for in the communication system so that multiple requestors can time their data packet transmission to arrive at the control station at the specified time. Hence, an up front request for a specific amount of bandwidth and granting of the request needs to occur so that mapping, alignment and non-collision transmission of the data packets could be accomplished among the multiple requestors.

12. Moreover, as disclosed in the specification, a node includes an LCD display, microprocessor and keyboard for alphanumeric and multi-language characters (See Figs. 2 & 12; page 34, lines 8-16), as well as a writing pad for graphical messaging, a technological sophistication beyond a typical pager system in 1994 at the time of the filing of the earliest priority application. Such a technologically advanced node would require a much larger data message. As such, a system as described in the specification would require a larger amount of data packets and bandwidth for transmitting the increased data messages than a conventional pager system used in 1994. Hence, propagation delays for sending the larger data messages via data packets over an increased bandwidth would require accounting for to prevent interleaving as would be understood by one skilled in the art at that time.

13. Given that a plurality of requestors are simultaneously operating, that the invention uses assigned time slots to ensure requests on f_4 do not overlap, that the system described requires a bandwidth indication to enable the controller to prevent message interleaving, and that message length is a normal part of packet format, use of knowledge of message length to control access to f_3 would be understood from reading the specification to one skilled in the art.

14. In conclusion from review of the specification, I (or a person of ordinary skill) would have understood at the time the original priority application was filed in June of 1994 that the description required the limitation "said first signal including a request for a specified amount of bandwidth," and further I would have understood that the Applicants were in possession of the claimed invention as a whole at the filing of the earliest priority application for U.S. Patent Application No. 09/874,005.

15. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false

statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or any patent issuing thereon.

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Udo W. Pooch, Ph.D., P.E.
Raytheon Professor of Computer Science

_____8/17/2004_____
Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application

Inventors: Wong, et al.

SC/Serial No.: 09/847,005

Confirm. No.: 5364

Filed: May 2, 2001

Title: Network Communication System Using Assigned Timeslots For Nodes To Request A Bandwidth Amount For Data Transmission With Resulting Grant For The Node to Transmit

PATENT APPLICATION

Art Unit: 2686

Examiner: Moore, James K.

Customer No. 23910

DECLARATION

37 C.F.R. 132

Mr. SAMUEL F. WOOD

The Chatham Group

Los Altos, CA

QUALIFICATIONS

1. Mr. Samuel F. Wood - Background

I, Sam Wood, declare as follows: I am the President of Modern System Research (MSR) which I founded in 1989 to provide consulting to the technology industry. I also provide expert witness consulting for technology litigation through The Chatham Group. I have over 30 years of experience in the technology industry, particularly the

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telecommunications industry. I have held engineering positions with Alantec/Fore Systems; I was the Director of Telephony Engineering at David Systems, I was the Manager of Telephone Technology at BNR (the research arm of Bell Northern, now Nortel); and was a Senior Member of The Technical Staff at Rolm where I was a co-architect of the first computer controlled PABX. I also worked in 2 way radio and paging systems engineering at Motorola. In addition, I have held significant consulting positions at California Microwave working on TDMA microwave systems, and at Tatung Telecom working on CDMA radiotelephone technology. I held previous engineering positions at Vidar, Fairchild and Sylvania. I hold a First Class FCC Radio Telephone License. I hold a BSEE from the University of California at Berkeley. I have also completed graduate work in engineering at The University of Santa Clara.

The above listed experience relating to packet communications and telecommunications, particularly my experience with Motorola, and my consulting work support the position that I was a person of ordinary skill in the art related to the subject matter of the invention described in U.S. Patent Application No. 09/874,005 at the time of its earliest priority date, June 24, 1994.

2. **Patents and Publications**

I hold 15 patents.

3. <u>Opinion</u>

I have reviewed U.S. Patent Application No. 09/874,005, including the claims, and the latest Office Action dated June 17, 2004 in that case. In particular, I have reviewed the claims relating to the Examiner's rejection indicating the claim language "said first request signal including a request for a specified amount of bandwidth to be allocated to the first node for transmitting data from the first node to the communication controller" is not described in the specification.

Based on my review of the application and my knowledge and experience in the art prior to June 24, 1994, as one skilled in the art, it is my opinion that the body of the patent application does not need to specifically discuss this issue as it is obvious from a reading of the specification as a whole and the knowledge of those in the art at that time that the network node must specify the bandwidth, or amount of data to be transmitted, in the first request signal in order for the controller to make an intelligent decision as to how much time (in the form of timeslots) to allocate to the first node for its data transmission.

In shared data networks bandwidth is scarce and the controller must manage the use of each node carefully to prevent a given node from hogging all the available bandwidth. [Note: In the data world bandwidth refers to the amount of data flowing through a network during a given time interval.] The bandwidth can be measured in bits, bytes or packets per second. Because of the inherent shortage of available bandwidth in shared systems such as the system described in the present application,

the controller cannot merely let the nodes seize the network and continually transmit data without providing limitations. It is necessary and obvious to one of skill of the art at the time of original filing in 1994 that the controller must specify the amount of data bandwidth to be allocated to the first node for transmitting data from the first node to the communications controller. Therefore, this issue does not need to be discussed specifically in the body of the patent application, as the description requires that limitation, and the limitation would have been recognized by a person skilled in the art in 1994.

Also as one skilled in the art at the time this invention was made it is clear to me that the first part of the claim (previously discussed) deals with the amount of data to be transmitted, and the second part of the claim deals with the amount of time necessary to transmit that data. It would be illogical to assume that the controller would grant the node an amount of time except that which is sufficient to allow the pager to transmit its data. As the amount of data bandwidth or packets are conveyed as part of the request (previously discussed), it is necessary only to convert that information into time slots and grant them to the node. Also, it is unnecessary to explicitly tell the node the number of timeslots as it merely needs to transmit the data it requested. In accord with the request-grant protocol the grant signal is not conveyed until the controller has the time slots available to carry that data.

To provide an additional perspective on these data systems, one needs to understand that unlike a local area network (LAN) where the nodes are separated by distances

measured in feet, the paging systems exemplified in this application have the nodes often separated in distances measured in miles. Specifically the specification on page 33, line 1 discloses that the radius of each cell is on the order of 20 miles. In the case of local area networks, the propagation delay between the nodes is short enough to allow the first node to freely use the shared bandwidth, and when it is finished, allow the second node to follow. In the case of a radio based data network, this approach does not work as the distances are long and the resulting propagation delays are long compared to the data packets transmitted. When the controller has to wait until each node has finished its transmission, there are large gaps of time between each piece of data transmitted on the network, and the resultant data bandwidth the network could provide would be extremely low. To address this issue, the present application requires the controller to assign fixed units of time (e.g. time slots) for each node to transmit in order for the network to operate efficiently. In this manner each subsequent node can start transmitting its data as soon as the previous one had finished, thus leaving no gaps. Because an external clock is provided to all nodes on f_1, all the nodes can be synchronized and have a common reference point to start and end their transmission. As the controller for the system of the present application cannot wait for the previous piece of data to arrive before it assigns the next unit, it must plan in advance the time slot allocation for data nodes based upon the information provided in the request signals.

Additionally, in comparison to typical paging devices at the time, the specification discloses a technologically advanced node for establishing the data message. As indicated in the specification, a node can include an LCD display, microprocessor and keyboard for alphanumeric and multi-language characters for graphical messaging (See Figs. 2 & 12; page 34, lines 8-16), a technological sophistication beyond a typical pager. Such a technologically advanced node would require a much larger data message and a resulting larger amount of bandwidth for data packets for transmitting the data messages than a conventional paging system used in 1994. Hence, delays of the larger data messages needing an increased bandwidth would require management by the controller to prevent large gaps between messages.

In conclusion, based on the above discussion and on my knowledge and experience in the art, it is my opinion that a person of ordinary skill would have understood at the time the original priority application was filed in June of 1994 that the system operation described in the body of this application requires the claim limitation "said first signal including a request for a specified amount of bandwidth."

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-referenced application or patent issuing thereon.

Samuel F. Wood

Executed in Los Altos, California

August 17, 2004